These rejections are respectfully traversed, and reconsideration thereof is requested. Claims 1-41 remain pending.

By this paper, the specification has been amended to more distinctly state certain aspects of the applicants' invention. Specifically, the term "pulsation artifact" is now clearly defined, as is the resulting "apparent" movement of still pictures.

As used in the present application, "pulsation artifacts" is the result of an encoding-decoding process on successive identical frames. Due to slight variations in the details in the encoded frames, visually apparent fluctuations in the displayed images may occur. These differences may give the impression of motion, and are known in the art as pulsation artifacts.

The current invention seeks to minimize pulsation artifacts that arise when encoded video images comprising a series of identical frames are decoded and played back. Because of the compression techniques used, a video image that is identical to the previous and next images may not be displayed identically. Variations in the luminance and/or chrominance data of the decoded images may falsely give the impression of movement from one image to the next. This is also referred to in the application as "apparent" movement of the still pictures.

Based upon the above specification amendments and the clarifying remarks, applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. § 112, first paragraph, rejection to the disclosure as being not enabling.

The present invention addresses the pulsation artifact or apparent movement problem discussed above by reciting, for example, in claim 23 a system for encoding a sequence of video frames which includes a pre-encode processing unit. The pre-encode processing unit includes a statistics measurement unit for use in **determining whether a current frame of the sequence of frames comprises a <u>still frame</u>**; and a control unit for modifying at least one controllable parameter employed in encoding the still frame **to minimize pulsation artifacts between still frames of a sequence of still frames** when the statistics measurement unit determines that the current frame is a still frame. The system also includes an encoding engine for encoding the current frame of the sequence of video frames using the at least one controllable encode parameter set by the pre-processing unit.

As noted, the Office Action cites Reininger et al. as allegedly rendering obvious applicants' claimed invention. This conclusion and the characterizations of the teachings of Reininger et al. are respectfully traversed.

Reininger et al. describe a multi-pass encode system which uses the number of bits produced from encoding a macroblock as feedback to change the quantizer used on the same macroblock in the same frame in a next encode pass. If the number of bits produced for a macroblock on a pass is greater than a threshold number, then the quantizer is changed for the next encode pass.

Initially, applicants note that Reininger et al. do not even address or discuss the same problem as that to which the present invention is directed. A careful reading of Reininger et al.

fails to uncover any discussion concerning processing still frames, let alone recognizing the pulsation artifact problem addressed by applicants, or applicants' claimed solution to the problem. Reininger et al. address the uniformity of image quality while limiting the amount of compressed data produced by the encoding process. Again, applicants' invention is directed to the visual perception of the video when displaying a series of encoded/decoded identical frames.

Further, the Office Action appears to confuse the terms "I frame" and "still frame". The term "still frame" is not specific to the encoding process and may in fact be encoded as any of I, P or B frames. As the Examiner knows, an I frame is a frame of video encoded only with intracoded information. However, a still frame, as used in the present application, is any frame in a series of frames **that is identical in visual appearance to the previous and/or next frame.** Therefore, when the images are displayed, the visual appearance should remain constant from one frame to the next.

Additionally, applicants recite in claim 23 a system for encoding video data which includes determining quantitatively from the unencoded data of multiple frames, i.e., the current frame and the previous frame, whether they are the same visually. **If the frames are visually identical, then at least one parameter is adjusted to minimize the pulsation artifacts between the two resultant encoded frames, i.e., the current frame and the previous frame.**

EN9-98-027   -5-

In contrast, Reininger et al. disclose a system for encoding video data which includes calculating the bits produced in encoded (i.e., compressed) macroblocks within a single frame and using this information as feedback for further refinements in the encoding process. Reininger et al. determine the number of bits produced for macroblocks within a frame, and if the size is too large, then the quantizer is changed for the subsequent encode pass. Thus, applicants respectfully submit that the measurement unit of Reininger et al. determines information substantially different from applicants' recited statistics measurement unit.
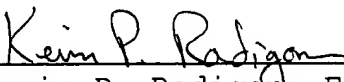
For all the above reasons, applicants respectfully request reconsideration and withdrawal of the obviousness rejection to claim 23 based upon the teachings of Reininger et al. The remaining independent claims (i.e., claims 1, 19, 35 & 37) include the same distinguishing characteristics discussed above in connection with claim 23. Further, each dependent claim is believed allowable for the same reasons as the respective independent claim from which it depends, as well as for its own additional characterizations.

Applicants gratefully acknowledge the Examiner's indication of allowability of claims 3-6, 9, 29 & 30 if rewritten in independent form. These claims have not been rewritten herein, however, since the independent claims from which they depend are believed to recite patentable subject matter for the reasons stated above.

In view of the above, allowance of all claims presented herewith is respectfully requested. If, however, any issue

remains unresolved, the Examiner is invited to telephone applicants' undersigned representative to further discuss the application.

Respectfully submitted,

Kevin P. Radigan, Esq.
Attorney for Applicants
Registration No. 31,789

Dated: August 31 , 2000

HESLIN & ROTHENBERG, P.C.
5 Columbia Circle
Albany, New York 12203
Telephone: (518) 452-5600
Facsimile: (518) 452-5579